

associating a signature with said snapshot;

maintaining said association between said snapshot and said signature.

2. The method of claim 1 further comprising the steps of:

verifying said signature;

constructing a new object using said snapshot, when said signature is verified.

3. The method of claim 1 further comprising the steps of:

storing said snapshot in another object;

storing said signature in said another object.

4. The method of claim 1 further comprising the steps of:

monitoring the status of said snapshot;

invalidating said signature when the status of said snapshot changes.

5. The method of claim 1 further comprising the step of creating said

signature using said snapshot.

6. The method of claim 5 further comprising the step of associating a

second signature with said snapshot.

7. The method of claim 6 further comprising the steps of:

verifying said second signature;

constructing a new object using said snapshot, when said second signature is verified.

8. Method for sealing an object comprising the steps of:

generating an encryption key;

taking a snapshot of the object, wherein the snapshot represents the object at a point of execution;

generating an encrypted snapshot;

deleting said snapshot.

9. The method of claim 8 further comprising the step of associating a signature with said snapshot.

10. The method of claim 9 further comprising the steps of:

verifying said signature;

constructing a new object using said snapshot, when said signature is verified.

11. An article of manufacturing comprising:

a computer usable medium having computer readable program code embodied therein for signing an object comprising:

computer readable program code configured to cause a computer to take a snapshot of the object wherein the snapshot represents the object at a point of execution;

computer readable program code configured to cause a computer to associate a signature with said snapshot;

computer readable program code configured to cause a computer to maintain said association between said snapshot and said signature.

12. The article of manufacture of claim 11 further comprising:

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computer readable program code configured to cause a computer to verify said signature;

computer readable program code configured to cause a computer to construct a new object using said snapshot, when said signature is verified.

13. The article of manufacture of claim 11 further comprising:

computer readable program code configured to cause a computer to store said snapshot in another object;

computer readable program code configured to cause a computer to store said signature in said another object.

14. The article of manufacture of claim 11 further comprising:

computer readable program code configured to cause a computer to monitor the status of said snapshot;

computer readable program code configured to cause a computer to invalidate said signature when the status of said snapshot changes.

15. The article of manufacture of claim 11 further comprising computer readable program code configured to cause a computer to create said signature using said snapshot.

16. The article of manufacture of claim 11 further comprising computer readable program code configured to cause a computer to associate a second signature with said snapshot.

17. The article of manufacture of claim 16 further comprising:

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computer readable program code configured to cause a computer to verify said second signature:

computer readable program code configured to cause a computer to construct a new object using said snapshot, when said second signature is verified.

18. An article of manufacturing comprising:

a computer usable medium having computer readable program code embodied therein for sealing an object comprising:

computer readable program code configured to cause a computer to generate an encryption key;

computer readable program code configured to cause a computer to take a snapshot of the object, wherein the snapshot represents the object at a point of execution;

computer readable program code configured to cause a computer to encrypt said snapshot;

computer readable program code configured to cause a computer to delete said snapshot.

19. The article of manufacture of claim 18 further comprising computer readable program code configured to cause a computer to decrypt said encrypted snapshot.

20. The article of manufacture of claim 18 further comprising computer readable program code configured to cause a computer to associate a signature with said snapshot.

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21. The article of manufacture of claim 20 further comprising:
computer readable program code configured to cause a computer to verify said
signature; and

computer readable program code configured to cause a computer to construct a
new object using said snapshot, when said signature is verified.

22. A system configured to sign an object comprising:

a first module of program code executing on a computer configured to take a
snapshot of an object wherein the snapshot represents the object at a point of execution;

a second module of program code executing on said computer configured to
generate a signature using said snapshot;

said first module configured to monitor the status of said snapshot, and to
invalidate said signature when said snapshot is changed.

23. The system of claim 22 wherein said first and second modules are
implemented as a second object.

24. The system of claim 23 wherein said snapshot and said signature are
stored in said second object, said second object limiting access to said snapshot through
one or more methods of said second object.

25. The system of claim 24 wherein said one or more methods of said second
object invalidate said signature when said access modifies said snapshot.

26. The system of claim 22 further comprising a sealing module comprising:
a key generation module configured to generate an encryption key;

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an encryption module configured to generate an encrypted snapshot from said snapshot;

a deletion module configured to delete said snapshot.

27. (Amended) The system of claim 26 wherein said second module is configured to invoke said key generation module, said encryption module and said deletion module.

28. The system of claim 27 wherein said second object is configured to verify said signature and construct a new object using said snapshot when said signature is verified.

REMARKS

Claims 1- 28 are pending. Claim 27 has been amended.

Rejections under 35 U.S.C. § 112

Claim 27 was rejected under U.S.C.112 second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, claim 27 was rejected for not providing proper antecedent basis. Claim 27 has been amended to provide proper antecedent basis and to better define that which applicant considers to be the invention. Applicant therefore requests that the section 112 rejection be withdrawn.

Rejections under 35 U.S.C. § 102

Claims 1-4 and 11-14 were rejected under 35 U.S.C. § 102(b) as being anticipated by Fischer (EPO 0 638 860 A2). This rejection is respectfully traversed. As discussed below,

Applicant respectfully submits that the Fischer reference only teaches saving instances of a cell that has stopped execution and therefore is not a live object.

In order for the Fischer reference to anticipate the claimed inventions under 35 U.S.C. § 102(b), the reference must teach each and every element of the claimed inventions. Independent claim 1 includes the features of:

- taking a snapshot of the object wherein the snapshot represents the object at a point of execution;
- associating a signature with said snapshot;
- maintaining said association between said snapshot and said signature.

Independent claim 11 includes the feature of a computer usable medium with computer readable code that is configured to cause a computer to run the features as claimed in claim 1. The Applicant respectfully submits that Fischer cannot support a section 102 rejection because, at the very least, the Fischer reference does not disclose or suggest taking or using a snapshot of an object where the snapshot represents the object at a point of execution.

As stated in the Amendment dated December 31, 2001, the term snapshot is representative of the state of a live object during a particular point of execution (See e.g., specification page 2, lines 6-71 and page 21 lines 1-5). A snapshot therefore represents a “picture” of a live object which is changing state. Subsequent to taking the snapshot, embodiments of the claimed inventions continue to execute the live object which may result in further modification to the values of the live object (See e.g., specification page 9 lines 16-20). Applicant respectfully submits that the snapshot of the claimed invention is different than the “cell” described in the Fischer reference. The cell is static, and does not correspond to a live object.

The Office has suggested that the cell as described in the Fischer reference represents a live object. Applicant respectfully traverses this suggestion. The Office has cited column 8, lines 20-23 in the Summary section of the Fischer reference which states as follows:

A feature of this invention is that the cell can be treated as an object itself, so that the execution state associated with the cell at the time of its saving can be invoked at a later time.

However, the Fischer reference then goes on to provide a more detailed definition of the saving of the execution state of the cell in the Detailed Description section, column 11, lines 47-54 which states:

The present invention utilizes discrete files, or electronic forms called "cells." These cells represent a package of objects which are essentially self contained and are a collection of instances whose **execution can be suspended and stored as a file**. A cell can be later reloaded (either by the same user or another) into main computer memory where execution can be resumed at a then-designated method. (Emphasis added.)

Therefore, as taught by the Fischer reference, the execution is suspended and a collection of instances are saved. Consequently, Applicant respectfully submits that the object as utilized in the Fischer reference is suspended and is not "live." As a result, Applicant further respectfully submits that the Fischer reference therefore does not disclose or suggest taking a "snapshot" of a "live" object. In addition, Applicant respectfully submits that the Fischer reference does not disclose the authentication of live objects. In contrast, the Fischer reference only discusses the authentication of static information and does not discuss or suggest usage of a signature that is associated with the snapshot of the live object.

Consequently, Applicant respectfully submits that the Fischer reference does not disclose all of the elements of claims 1 and 11 and respectfully requests that the Office withdraw the section 102 rejection. The dependent claims are submitted to be allowable for at least the same reasons as the independent claims.

Rejections under 35 U.S.C. § 103

The Examiner has rejected claims 5-7, 15-17, and 22 under 35 USC § 103(a) as being unpatentable over Fischer in view of Schneier (Applied Cryptography). This rejection is respectfully traversed. To support a section 103 rejection, the cited prior art references must

disclose or suggest all of the features of the claimed inventions. Applicant respectfully submits that the cited prior art references does not disclose or suggest all of the features of the claimed inventions and therefore fails to make a prima facie showing of a section 103 rejection.

Applicant respectfully submits that Fischer neither discloses or suggests the features of independent claim 22 because, as indicated above in reference to the section 102 remarks, Fischer does not disclose or suggest the taking of a snapshot of an object or using a snapshot of an object. With regard to Schneier, the Office has cited page 39 of Schneier for support of the section 103 rejection. Upon review of page 39 of Scheier, Applicant respectfully submits that the cited portion of Schneier does not disclose or suggest the feature of taking or using a snapshot of an object. More specifically, neither cited prior art reference describes or suggests the use of a snapshot that represents a “picture” of a live object that is changing state. Subsequent to taking the snapshot, embodiments of the claimed inventions continue to execute the live object that may result in further modification to the values of the live object. Therefore, the Applicant respectfully submits that the Office has failed to make a prima facie showing of obviousness as is required in a section 103 rejection. Accordingly, Applicant respectfully submits that claim 22 is not obvious from Fischer in view of Schneier. Applicant further submits that dependent claims 23-28 are allowable for at least the same reasons as independent claim 22.


As discussed with regard to independent claim 22 and with regard to the section 102 discussion above, Schneier and Fischer, individually or in combination, do not disclose or suggest the feature of taking a snapshot of an object or using a snapshot of an object where the snapshot represents the object at a point of execution. Therefore, independent claims 1 and 11 are not rendered obvious for at least this reason because all of the elements of the independent claims are not disclosed or suggested by the cited prior art references. Thus, Applicant submits that claims 5-7 and 15-17 are patentable for at least the same reasons as independent claims 1 and 11.

Claims 8-10 and 18-21 were rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer in view of Chaplin (U.S. Patent No. 5,315,655). This rejection is traversed. Applicant respectfully submits that Fischer in view of Chaplin does not disclose or suggest all of the features of independent claims 8 and 18 and therefore fails to make a prima facie showing of a section 103 rejection.

Fischer, as indicated above, fails to disclose or suggest the taking of a snapshot of an object or using a snapshot of an object. Chaplin discloses a method of encoding and decoding data. Chaplin, like the other cited prior art references, does not disclose or suggest the taking or using of a snapshot of a live object. Therefore, Applicant respectfully submits that independent claims 8 and 18 are allowable because Fischer and Chaplin, either alone or in combination do not disclose or suggest all of the features of independent claims 8 and 18. Thus, Applicant respectfully submits that the Office has failed to make a prima facie showing of obviousness as is required in a section 103 rejection. In addition, all of the dependent claims are submitted to be patentable for at least the same reasons as independent claims 8 and 18 are patentable over the cited art of record.

The Applicant submits that the pending claims are in condition for allowance. A notice of allowance is respectfully requested. If the Examiner has any questions, the Examiner is kindly requested to contact the undersigned at (408) 749-6900. If any additional fees are due in connection with the filing of this paper, the Commissioner is also authorized to charge Deposit Account No. 50-0805 (Order No. SUNMP043C).

Respectfully submitted,
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